

Haulage Fatalities at Surface Mines, 1998-2002



U.S. Department of Labor
Elaine L. Chao, Secretary

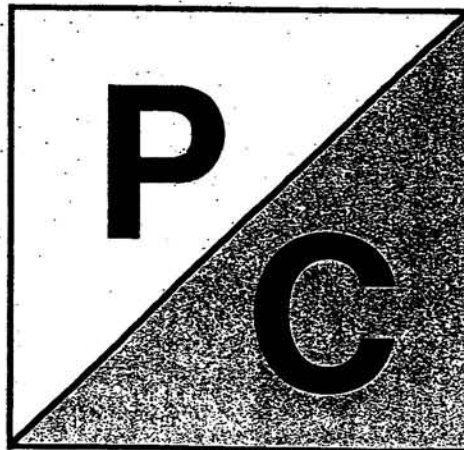
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Sept 2003

PC 7053

OCT 20 2003



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HAULAGE FATALITIES AT SURFACE MINES
1998-2002

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This report combines data on fatal injuries resulting from surface mining haulage accidents for the period 1998-2002, and is one in a continuing series of Program Circulars published by the Office of Injury and Employment Information as an aid to management, inspectors, miners and other interested parties.

Eleven tables were compiled from data contained in the final inspection investigation reports for fatalities occurring at coal and metal/nonmetal mines during 1998-2002. The fatalities were analyzed and the details summarized in this report.

During 1998-2002, 394 fatalities occurred in the mining industry; of these, 253 (64.2 percent) occurred on the surface. Surface haulage accidents accounted for 25.9 percent of the total fatalities and 40.3 percent of the surface fatalities reported for the industry during this time period. Coal surface haulage fatalities accounted for more than a third (35.9 percent) of all surface coal fatalities; limestone and sand and gravel accounted for almost half (44.3 percent) of all surface metal/nonmetal fatalities. Almost two-thirds (63.7 percent) of the victims were 41 plus years old. Haulage trucks were involved in 36.3 percent of the accidents. The primary types of accidents were (18 fatalities) rolled or drove off bench, road or highwall; (18 fatalities) were struck or run over by a machine. The primary cause of the accidents was failure to maintain machinery in safe working order.

**TABLE 1. - Haulage fatalities, by type of machinery at
surface metal/nonmetal and coal mines, 1998-2002**

Type of Machinery	1998		1999		2000		2001		2002		Total	Percent
	Coal	M/N M	Coal	M/N M	Coal	M/N M	Coal	M/N M	Coal	M/N M		
Front-end loader	-	3	-	4	1	3	-	-	-	7	18	17.6
Haulage truck	3	6	2	6	4	4	2	2	4	4	37	36.3
Water truck/pickup/utility truck (not haulage truck) Highway truck	1	3	2	2	-	1	1	3	1	-	14	13.7
Locomotive/man cars	-	3	-	-	-	1	-	1	-	1	6	5.9
Conveyor belt	-	5	-	3	-	3	-	5	-	3	19	18.6
Tractor/scrapper	-	-	-	1	-	2	-	-	-	-	3	2.9
Forklift	-	-	-	1	2	1	-	1	-	-	5	4.9
Total	4	20	4	17	7	15	3	12	5	15	102	100.0

Percentages shown in this and subsequent tables may not add to 100 percent in order to maintain consistency with equivalent numbers in other tables.

TABLE 2. - Haulage fatalities, by work location at surface
metal/nonmetal and coal mines, 1998-2002

Work Location	1998	1999	2000	2001	2002	Total	Percent
Quarry/Open pit	9	13	7	9	7	45	44.1
Haulage road/roadway /ramp	7	5	4	3	7	26	25.5
Mill/preparation plant	5	2	6	1	4	18	17.6
Surface at underground	1	1	-	1	2	5	4.9
Dredge	-	-	-	-	-	-	-
Shops and yards	1	-	4	1	-	6	5.9
Railroad crossing	1	-	1	-	-	2	2.0
Total	24	21	22	15	20	102	100.0

TABLE 3. - Haulage fatalities, by victim's occupation
at surface metal/nonmetal and coal mines, 1998-2002

Victim's occupation	1998		1999		2000		2001		2002		Total	Percent
	Coal	M/NM	Coal	M/NM	Coal	M/NM	Coal	M/NM	Coal	M/NM		
Truck driver	4	6	3	6	1	5	2	2	2	4	35	34.3
Owner/ supervisor/ foreman	-	2	-	2	2	3	1	-	-	2	12	11.8
Loader/ laborer/oiler	-	1	-	2	-	2	-	4	-	3	12	11.8
Front-end loader operator	-	1	-	1	-	1	-	1	-	1	5	4.9
Mechanic/ repairman/ Electrician/ welder	-	6	1	4	1	1	-	4	3	1	21	20.6
Engineer/rail worker	-	-	-	-	-	-	-	-	-	1	1	1.0
Mill operator/ plant operator/conveyor operator	-	2	-	1	1	1	-	-	-	3	8	7.8
Scraper operator Tractor	-	-	-	1	-	1	-	-	-	-	2	2.0
Dozer operator	-	1	-	-	1	1	-	-	-	-	3	2.9
Security guard	-	1	-	-	-	-	-	-	-	-	1	1.0
Not elsewhere classified	-	-	-	-	1	-	-	1	-	-	2	2.0
Total	4	20	4	17	7	15	3	12	5	15	102	100.0

TABLE 4. – Haulage fatalities, by work activity at time of accident
at surface metal/nonmetal and coal mines, 1998-2002

Work activity at time of the accident	1998	1999	2000	2001	2002	Total	Percent
Operate truck	9	9	7	4	5	34	33.3
Maintenance/repair/inspecting	4	4	3	6	3	20	19.6
Operate front-end loader	1	1	1	1	3	7	6.9
Standing/walking/running	2	1	3	1	5	12	11.8
Load/unload/cleanup material by hand	-	1	1	1	2	5	4.9
Operate tractor/scrapper/dozer	2	1	-	-	-	3	2.9
Spotting/dropping/switching/couple/uncouple rail cars	2	-	-	1	-	3	2.9
Construction	-	-	2	-	-	2	2.0
Load/unload/move machinery	2	1	-	1	-	4	3.9
Operate forklift	-	1	2	-	-	3	2.9
Riding in equipment/not operator	-	-	-	-	1	1	1.0
Operate plant/conveyor belt	2	2	2	-	1	7	6.9
Not elsewhere classified	-	-	1	-	-	1	1.0
Total	24	21	22	15	20	102	100.0

**TABLE 5. - Haulage fatalities, by primary cause of the accident
at surface metal/nonmetal and coal mines, 1998-2002**

Primary cause of the accident	1998		1999		2000		2001		2002		Total	Percent
	Coal	M/N M	Coal	M/N M	Coal	M/N M	Coal	M/N M	Coal	M/N M		
Failure to keep machine under control	1	1	-	-	-	1	-	-	-	-	3	2.9
Failure to maintain machinery in safe working order	2	3	2	3	1	3	1	3	1	5	24	23.5
Failure to follow rules, instructions, heed warnings, or to take precautions	-	1	-	1	1	1	-	-	-	1	5	4.9
Inadequate, or lack of, berms	-	1	-	1	1	-	-	-	1	1	5	4.9
Failure to make sure area is clear of persons before moving machinery or supplies and/or to provide a warning signal	1	1	-	2	-	2	-	-	-	2	8	7.8
Failure to lock out or de-energize machinery	-	3	-	-	-	2	-	3	-	-	8	7.8
Failure to block machinery	-	-	-	3	-	1	1	2	1	2	10	9.8
Lack of safety training in operating or working around machinery or mine hazards	-	-	1	-	1	-	-	-	-	1	3	2.9
Failure to insure safe work procedures when performing repair or maintenance work on machinery	-	2	-	-	-	1	-	1	-	-	4	3.9
Failure to wear seat/safety belts or no belts provided	-	-	-	-	1	1	-	-	-	-	2	2.0
Failure to engage and/or turn wheels into bank when parking on a grade; or to set brakes	-	3	-	1	-	-	1	2	1	-	8	7.8
Failure to guard moving conveyor belt	-	3	-	3	-	1	-	-	-	1	8	7.8
Failure to properly secure load	-	-	-	-	-	1	-	-	-	-	1	1.0
Failure to establish or enforce traffic rules and a safe traffic pattern or sufficient illumination	-	-	-	-	2	1	-	-	1	-	4	3.9
Failure to establish a safe distance for dumping from the undercut edges of stockpiles	-	1	-	-	-	-	-	-	-	-	1	1.0
Failure to provide proper machinery for moving rail cars	-	1	-	-	-	-	-	-	-	-	1	1.0
Failure to construct roadway and dumping facilities to support loads & accommodate equipment	-	-	-	1	-	-	-	-	-	1	2	2.0
Collapse of spoil embankment	-	-	1	-	-	-	-	-	-	-	1	1.0
Failure to provide suitable rigging and to properly attach it to equipment being hoisted	-	-	-	-	-	-	-	1	-	-	1	1.0
Not elsewhere classified	-	-	-	2	-	-	-	-	-	1	3	2.9
Total	4	20	4	17	7	15	3	12	5	15	102	100

TABLE 6. - Haulage fatalities, by type of accident at surface metal/nonmetal and coal mines, 1998-2002

Type of accident	1998		1999		2000		2001		2002		Total	Percent
	Coal	M/N M	Coal	M/N M	Coal	M/N M	Coal	M/N M	Coal	M/N M		
Rolled or drove off bench, road, or highwall 1/	-	3	2	4	-	3	-	1	3	2	18	17.6
Struck or run over by machine	-	2	-	3	2	5	1	-	1	4	18	17.6
Thrown, fell, or jumped from machine 1/	3	2	2	1	2	-	1	2	1	3	17	16.7
Crushed by machine	-	1	-	-	1	-	-	-	-	-	2	2.0
Collision between two moving machines	1	2	-	1	-	1	-	-	-	-	5	4.9
Pulled into or became entangled in a moving conveyor belt	-	4	-	2	-	2	-	3	-	2	13	12.7
Struck by falling/sliding object/material	-	-	-	2	1	-	-	2	-	-	5	4.9
Caught between a moving machine and a stationary object/machine or part of machine	-	1	-	-	-	2	-	2	-	1	6	5.9
Crushed between two machines	-	3	-	-	-	-	-	-	-	-	3	2.9
Crushed by falling/sliding machine or part of a machine	-	1	-	2	1	2	1	2	-	2	11	10.8
Struck or thrown against moving machine	-	-	-	-	-	-	-	-	-	-	-	-
Caught between doors of a bottom dump trailer	-	-	-	1	-	-	-	-	-	-	1	1.0
Not elsewhere classified	-	1	-	1	-	-	-	-	-	1	3	2.9
Total	4	20	4	17	7	15	3	12	5	15	102	100.0

1/ Beginning in 1998 – see Table 6A.

TABLE 6A. Haulage fatalities by grade of travelway at surface metal, nonmetal, and coal mines 1999-2002

Grade	1999		2000		2001		2002		Total
	Coal	M/NM	Coal	M/NM	Coal	M/NM	Coal	M/NM	
2%	-	-	-	-	1	-	1	-	2
3%	-	-	1	-	-	-	-	-	1
6%	-	1	-	-	-	-	-	-	1
8%	1	-	-	-	-	1	1	-	3
9%	-	-	-	-	1	-	-	-	1
10%	-	1	-	1	-	1	1	1	5
11%	-	-	-	1	-	1	-	-	2
12%	-	-	-	-	1	1	-	1	3
14%	1	-	-	1	-	-	-	-	2
16%	-	1	-	-	-	-	-	1	2
17%	1	1	-	1	-	-	-	-	3
24%	-	-	-	-	-	-	1	-	1
¹ Not reported	2	1	1	-	-	-	-	1	5
² Not applicable	-	12	5	11	-	8	1	11	48
Total	5	17	7	15	3	12	5	15	79

The grade of the travelway would be more of a factor in these two accident types.

¹ Was not reported but could have been a factor.

² The accident was not related to grade of travelway.

**TABLE 7. - Haulage fatalities, by victim's total mining experience
at surface metal/nonmetal and coal mines, 1998-2002**

Victim's total mining experience	1998	1999	2000	2001	2002	Total	Percent
0 - 1 year	10	7	11	6	7	41	40.2
2 - 5 years	5	3	3	3	2	16	15.7
6 - 10 years	4	3	2	-	-	9	8.8
11 - 15 years	2	1	-	1	1	5	4.9
16 - 20 years	1	2	2	2	2	9	8.8
21 - 25 years	1	2	1	-	3	7	6.9
26 - 30 years	-	2	-	2	3	7	6.9
31 years and over	1	1	3	1	-	6	5.9
Unknown (not reported)	-	-	-	-	2	2	2.0
TOTAL	24	21	22	15	20	102	100.0

**TABLE 8. - Haulage fatalities, by victim's job experience
at surface metal/nonmetal and coal mines, 1998-2002**

Victim's job experience	1998	1999	2000	2001	2002	Total	Percent
0 - 1 year	7	8	7	7	7	36	35.3
2 - 5 years	8	3	5	2	4	22	21.6
6 - 10 years	5	1	3	2	1	12	11.8
11 - 15 years	1	3	1	1	1	7	6.9
16 - 20 years	-	1	-	2	2	5	4.9
21 - 25 years	1	1	2	-	2	6	5.9
26 - 30 years	-	2	2	1	2	7	6.9
31 years and over	2	2	2	-	-	6	5.9
Unknown (not reported)	-	-	-	-	1	1	1.0
TOTAL	24	21	22	15	20	102	100.0

**TABLE 9. - Haulage fatalities, by victim's experience at this mine (company)
at surface metal/nonmetal and coal mines, 1998-2002**

Victim's experience at this mine (company)	1998	1999	2000	2001	2002	Total	Percent
0 - 1 year	11	12	11	9	8	51	50.0
2 - 5 years	7	3	3	2	6	21	20.6
6 - 10 years	4	2	5	-	-	11	10.8
11 - 15 years	1	-	1	-	1	3	2.9
16 - 20 years	-	-	-	2	2	4	3.9
21 - 25 years	-	2	1	-	-	3	2.9
26 - 30 years	-	1	-	2	2	5	4.9
31 years and over	1	1	1	-	-	3	2.9
Unknown (not reported)	-	-	-	-	1	1	1.0
Total	24	21	22	15	20	102	100.0

TABLE 10. - Haulage fatalities, by age of victim at surface metal/nonmetal and coal mines, 1998-2002

Age of victim	1998	1999	2000	2001	2002	Total	Percent
18 - 21	-	1	1	1	2	5	4.9
22 - 25	1	2	1	1	1	6	5.9
26 - 30	2	1	3	-	-	6	5.9
31 - 35	3	1	-	1	2	7	6.9
36 - 40	3	4	2	4	-	13	12.7
41 - 45	4	1	7	1	3	16	15.7
46 - 50	1	4	2	1	4	12	11.8
51 - 55	4	-	2	2	3	11	10.8
56 - 60	2	5	4	3	1	15	14.7
61 - 65	2	2	-	1	3	8	7.8
66 and over	2	-	-	-	1	3	2.9
Total	24	21	22	15	20	102	100.0

TABLE 11. - Haulage fatalities, by commodity at surface metal/nonmetal and coal mines,
1998-2002

Commodity	1998	1999	2000	2001	2002	Total	1998- 2002 Total Surface Fatalities	Percent That Were Haulage
Alumina	1	-	-	-	-	1	3	33.3
Boron	-	-	-	-	-	-	1	-
Cement	1	-	-	-	1	2	12	16.7
Clay	1	-	-	-	-	1	2	50.0
Coal, anthracite	-	-	-	-	-	-	1	-
Coal, bituminous	4	4	7	3	5	23	64	35.9
Copper	-	1	-	1	1	3	5	60.0
Gemstones (NEC)	-	-	-	-	-	-	2	-
Gold/Silver	1	1	-	1	-	3	6	50.0
Granite	3	1	1	1	-	6	10	60.0
Gypsum	-	-	-	-	-	-	2	-
Iron	-	1	-	-	-	1	3	33.3
Lead/Zinc	-	-	-	-	-	-	1	-
Lime	-	-	1	-	-	1	2	50.0
Limestone	4	3	5	2	5	19	51	37.3
Molybdenum	1	-	-	-	-	1	1	100.0
Nonmetal (not elsewhere classified)	-	-	1	-	-	1	1	100.0
Phosphate	-	-	-	-	-	-	2	-
Potash	-	-	-	-	1	1	1	100.0
Sand and gravel	4	7	5	6	5	27	61	44.3
Sandstone	2	-	-	-	-	2	3	66.7
Stone (NEC)	1	1	2	1	1	6	12	50.0
Titanium	-	-	-	-	-	-	1	-
Traprock	1	1	-	-	-	2	4	50.0
Trona	-	-	-	-	1	1	1	100.0
Uranium	-	1	-	-	-	1	1	100.0
TOTAL	24	21	22	15	20	102	253	403